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# UPDATES: Area Studies

*Updates for employees and colleagues of the Resources and Technology Division*

Resources and Technology Division  
Economic Research Service  
U.S. Department of Agriculture

June 1993

## Agricultural Production and Natural Resource Data Linked in White River Basin Study

The Area Study project is a data collection and modeling effort designed to assess national policy impacts. The focus is on the development of multi-year, farm-level data that link production activities to environmental characteristics for selected regions. The effort involves the Economic Research Service (ERS), the Soil Conservation Service (SCS), U.S. Geological Survey (USGS), and the National Agricultural Statistics Service (NASS).

A survey was developed to collect detailed information on production technologies, cropping systems, and agricultural practices at both the field and whole farm level. The survey sample points were chosen to correspond with National Resource Inventory (NRI) sample points. SCS conducts an NRI every 5 years, collecting soil, water, and other natural resource data for nearly a million sample sites nationwide. The use of the NRI points thus establishes a link between production

activities and related resource characteristics.

The sites chosen were selected from those included in USGS's National Water Quality Assessment Program (NAWQA) and were areas with significant cropland and agricultural chemical use levels. Four areas were chosen in 1991: the Central Nebraska Basins, the White River Basin (Indiana), the Lower Susquehanna Basin (Pennsylvania), and the Mid Columbia Basin (Washington).

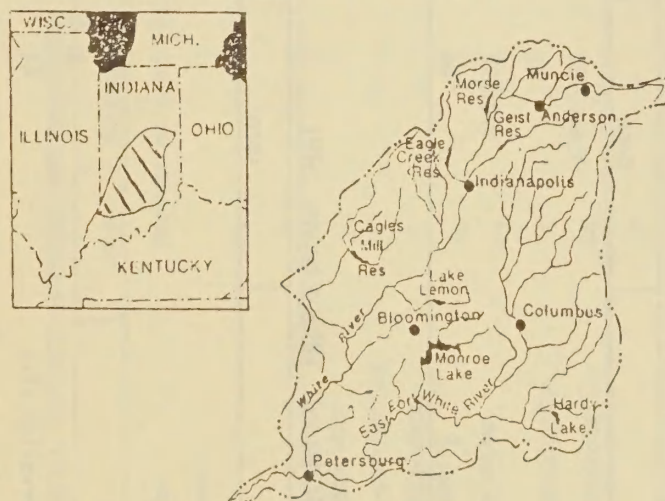
This issue of **RTD UPDATES** summarizes the White River Basin Area Study survey data. It includes information on conservation practices, chemical use, tillage methods, and farm type by sales class. In addition, soil characteristics were used to construct a soil leaching potential index for the area.

Contact: L. Nodine or R. Keim, RTD (202) 219-0402.

### Monthly Data Releases Planned

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### White River Basin Survey Area



**The White River Basin study area is approximately 11,350 square miles, draining parts of central and southern Indiana. Agriculture is the primary land use in the basin, accounting for approximately 55 percent of the area.**



# White River Basin (Indiana): Major crop production and chemical use, 1991

Item	Corn	Soybeans	Wheat	Hay	Pasture
Acres in crop	1,664,720	1,330,730	151,780	103,890	307,180
% Acres in crop	42	34	4	3	8
Acres in commodity program	990,392	N/A	87,543	N/A	N/A
Yield per acre (bushels)	99	41	41	3 (tons)	N/A
N/A indicates not applicable.					

# White River Basin (Indiana): Tillage types, 1991

Item	Corn	Soybeans	Wheat	Hay	ALL
Percent of acres in crop					
Conservation tillage:					Percent
No-till	14	17	19	10	14
Ridge till	2	1	0	0	1
Mulch/other conservation till	41	37	29	0	36
Conventional tillage:					
Moldboard plow	19	25	9	0	19
Other conventional	25	20	25	0	21

# White River Basin (Indiana): Soil conservation practices, 1991

Practice	Corn	Soybeans	Wheat	Hay	Pasture
Percent of acres in crop					
Chiseling and subsoiling	51	42	25	N/A	N/A
Conservation cover	10	10	29	14	9
Crop residue use	35	36	35	N/A	N/A
Grassed waterway	27	25	40	19	20
Grasses and legumes in rotation	3	6	16	11	3
Terrace	3	2	2	N/A	N/A
Grazing land protection	N/A	N/A	N/A	2	11
Pasture and hay management	N/A	N/A	N/A	25	23
Planned grazing system	N/A	N/A	N/A	4	24
Range seeding	N/A	N/A	N/A	4	9
N/A indicates not applicable.					

# White River Basin (Indiana): Pest management practices, 1991

Practice	Corn	Soybeans	Wheat
Percent of acres in crop			
Type of pest management:			
Rotations	77	87	89
Biological pest control	1	1	1
Pest resistant varieties	13	19	20
Non-pesticidal sprays	1	2	1
Reduced pesticide use strategies	10	10	8
Destroy crop residues	22	27	28
Source of pest management:			
Hired staff	2	1	0
Extension/univ./State/Federal	4	5	15
Chemical dealer	32	29	33
Professional scout	3	2	2

# White River Basin (Indiana): Nutrient management practices, 1991

Practice	Corn	Soybeans	Wheat
Percent of acres in crop			
Type of nutrient management:			
Soil nitrogen test	13	10	6
Tissue analysis	3	1	2
Factor influencing nitrogen use:			
Fertilizer company recommendation	16	15	14
Consultant recommendation	5	6	15
Crop appearance	10	7	10
Soil/tissue test	13	8	9
Extension service recommendation	1	1	2
Standard amount for crop/rotation	48	47	46
Manure Usage	9	9	15

# White River Basin (Indiana): Pesticide Use, 1991

Practice	Corn		Soybeans	
	Lbs/acre/year	Percent of acres	Lbs/acre/year	Percent of acres
Herbicides:				
2,4-D	0.5	6	1.0	3
Acifluorfen	N/A	N/A	0.3	10
Alachlor	2.0	26	1.8	18
Atrazine	1.6	89	N/A	N/A
Bentazon	-	-	0.9	13
Butylate	3.5	15	N/A	N/A
Chlorimuron-ethyl	N/A	N/A	*	22
Clomazone	N/A	N/A	0.6	11
Cyanazine	2.1	13	N/A	N/A
Dicamba	0.4	6	N/A	N/A
Fluazifop-P-butyl	N/A	N/A	0.2	8
Glyphosate	N/A	N/A	0.6	7
Imazaquin	N/A	N/A	0.1	18
Imazethapyr	N/A	N/A	0.1	19
Linuron	0.0	0	0.6	7
Metolachlor	2.0	30	1.9	12
Metribuzin	-	-	0.4	24
Paraquat	0.6	4	-	-
Pendimethalin	-	-	0.7	9
Trifluralin	-	-	0.9	31
Insecticides:				
Carbofuran	1.0	3	0.0	0
Chlorpyrifos	1.2	9	0.0	0
Fonofos	1.1	8	N/A	N/A
Telfluthrin	0.1	3	N/A	N/A

- too few observations for estimation, \* indicates less than 0.05 lbs/acre/year  
N/A indicates not registered for that crop.

# White River Basin (Indiana): Commercial Fertilizer Use, 1991

Item	Corn		Soybeans		Wheat	
	Lbs/acre/year	Percent of acres	Lbs/acre/year	Percent of acres	Lbs/acre/year	Percent of acres
Nitrogen	148	95	21	20	65	79
Phosphorous	79	92	47	37	62	72
Potassium	103	84	83	42	77	66



# White River Basin (Indiana): Farms by sales class and farm type, 1991

Value of agricultural sales	Cash grains	Other field crops	Beef/hogs & sheep	Dairy/poultry/other livestock	CRP Only
Percent					
0-\$9,999	6	83	16	12	89
\$10,000-\$19,999	4	0	8	6	11
\$20,000-\$29,999	4	0	4	3	0
\$30,000-\$39,999	5	0	4	0	0
\$40,000-\$59,999	6	0	5	0	0
\$60,000-\$99,999	15	17	12	18	0
\$100,000-\$249,999	27	0	20	36	0
\$250,000-\$499,999	18	0	16	18	0
\$500,000 and up	15	0	15	6	0
Share of total	74	1	20	4	1

# White River Basin (Indiana): Soil leaching potential index\*

Soil leaching potential	Corn	Soybeans	Wheat	Hay	Pasture	Share of agricultural land
Percent of acres in crop						Percent
Very high	--	0	0	0	0	--
High	17	16	31	16	25	18
Moderate	51	54	47	49	43	51
Low	27	24	19	29	25	25
Very low	--	--	0	0	0	--
Unknown	5	5	2	7	8	5

-- Indicates less than one percent.

Soil leaching potential (SLP) = texture component + organic matter component + pH component

\* Potential of soils to leach highly soluble chemicals, based on intrinsic soil properties. Algorithm developed by J.B. Weber and R.L. Warren, North Carolina State University, in Weber, J.B. and R.L. Warren. "Herbicide Behavior in Soils: A Pesticide/Soil Ranking System for Minimizing Groundwater Contamination"

Proceedings of the Northeastern Weed Science Society Vol. 46, 1992.

## RTD UPDATES

Economic Research Service

U.S. Department of Agriculture

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# RTD UPDATES: Changes in Farmland Values

*Data updates for employees and colleagues of the Resources and Technology Division*

Resources and Technology Division  
Economic Research Service  
U.S. Department of Agriculture

June 1993

## U.S. Farmland Values Expected To Rise 2 Percent By April 1994

The Survey Research Laboratory at the University of Wisconsin surveys a national panel of rural appraisers to collect information on farmland values for ERS. Each quarter, the appraisers are asked about their opinion on changes in farmland values over the previous quarter and the previous year, and their expectations of changes over the next quarter and the next year. The data are regional and are aggregated into U.S. level. The regions comprise the 48 States. The reported changes have generally corresponded to expected changes in farmland values.

### Reported Annual Rates

The reported annual rate of appreciation in farmland values trended downward from 1989 until 1992, dropping to 0.9 percent for the year beginning April 1991. The annual rate of change in U.S. farmland values has since increased, reaching 2.2 percent for the year beginning April 1992.

### Expected Annual Rates

The annual rate of appreciation in U.S. farmland values expected by the national panel of appraisers trended downward from 1989 until 1991, declining to 0.4 percent for the year beginning January 1991. The expected annual rate has since trended upward and the panel forecasts a 2-percent increase in U.S. values for the April 1993 to April 1994 period.

### Quarterly Rates

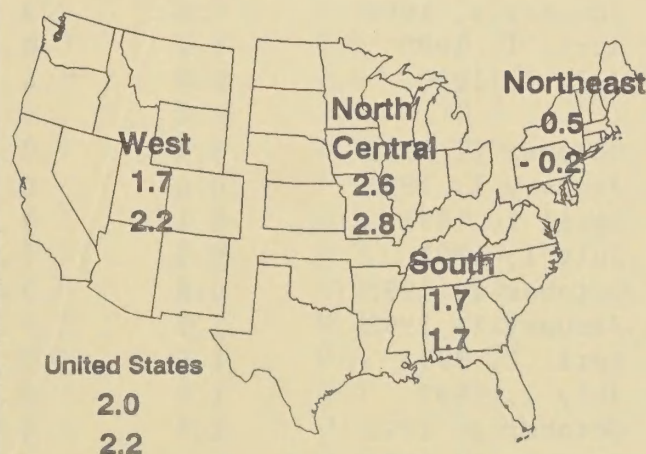
The cycle of quarterly rate of appreciation matches the cycle of annual rate of change in U.S. farmland values. The expected and the reported quarterly rates trended downward from the fourth quarter of 1989 through the first quarter of 1991, reaching the low of -0.1 percent. Since then, both quarterly rates have trended upward. U.S. farmland values appreciated by 0.7 percent in the first quarter of 1993 and the panel expects a 0.4-percent increase during the second quarter of 1993.

Further information: John Jones, RTD (202) 219-0425.

## Monthly Data Releases Planned

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**U.S. Farmland Values Expected to Average 2 Percent Higher from April 1, 1993 to April 1, 1994**



Top number: Expected percentage change during April 1993 to April 1994

Bottom number: Reported percentage change during April 1992 to April 1993



Table 1. Reported annual percentage changes in farmland values

For the year Beginning	Northeast	North Central	South	West	U.S.
			percent		
May 1, 1988	2.4	10.1	3.7	5.0	6.4
August 1, 1988	2.8	9.5	5.5	4.1	6.5
October 1, 1988	2.8	7.6	4.7	4.8	5.8
January 1, 1989	4.2	6.8	3.0	4.2	4.8
April 1, 1989	5.3	7.3	2.2	4.8	5.0
July 1, 1989	1.6	7.3	2.1	5.0	4.9
October 1, 1989	2.6	7.0	2.4	4.4	4.7
January 1, 1990	3.0	5.1	1.0	3.3	3.3
April 1, 1990	2.2	2.3	1.3	2.6	2.1
July 1, 1990	0.4	4.2	1.2	3.2	2.9
October 1, 1990	1.6	1.8	-0.2	1.6	1.1
January 1, 1991	0.5	2.9	-1.2	1.8	1.3
April 1, 1991	0.5	3.1	-2.3	1.5	0.9
July 1, 1991	0.6	2.5	1.0	1.8	1.8
October 1, 1991	1.5	2.7	-0.2	1.7	1.5
January 1, 1992	0.2	2.6	0.3	3.1	2.0
April 1, 1992	-0.2	2.8	1.7	2.2	2.2

Source: The Survey of Rural Appraisers, Econ. Res. Serv., USDA.

Table 2. Expected annual percentage changes in farmland values

For the year beginning*	Northeast	North Central	South	West	U.S.
			percent		
May 1, 1988	5.6	5.4	-1.3	3.7	3.6
August 1, 1988	7.4	4.4	2.3	3.2	4.6
November 1, 1988	5.2	5.2	2.9	3.4	4.0
May 1, 1989	2.4	4.5	2.4	3.3	3.4
August 1, 1989	1.4	4.8	2.7	3.0	3.5
October 1, 1989	2.3	5.1	3.7	3.9	4.2
January 1, 1990	6.8	2.5	3.1	3.6	3.1
April 1, 1990	4.7	4.6	2.5	4.4	3.9
July 1, 1990	1.7	4.7	1.5	3.0	3.2
October 1, 1990	3.1	3.2	0.1	2.3	2.0
January 1, 1991	0.4	0.2	-0.7	1.7	0.4
April 1, 1991	1.1	2.1	1.6	2.0	1.9
July 1, 1991	0.5	1.7	-1.1	1.9	0.9
October 1, 1991	0.8	1.3	1.3	1.2	1.3
January 1, 1992	1.3	1.1	0.6	1.6	1.1
April 1, 1992	1.6	2.1	1.2	1.8	1.8
July 1, 1992	1.9	0.8	0.5	1.5	1.0
October 1, 1992	1.5	0.8	-1.2	1.0	0.3
January 1, 1993	1.6	2.0	0.6	2.2	1.7
April 1, 1993	0.5	2.6	1.7	1.7	2.0

\* The date when expectations about the following 12 months were formed.  
Source: The Survey of Rural Appraisers, Econ. Res. Serv., USDA.



Table 3. Reported quarterly percentage change in farmland values

Quarter	Northeast	North		South	West	U.S.
		Central				
			percent			
May 1 - July 31, 1988	2.6	3.5	-3.9	3.0	1.2	
August 1 - October 31, 1988	1.8	2.8	1.0	0.6	1.6	
February 1 - April 30, 1989	0.4	3.6	1.4	1.4	2.2	
May 1 - July 31, 1989	0.1	1.6	1.6	0.8	1.3	
July 1 - September 30, 1989	0.4	1.5	0.4	1.4	1.1	
October 1 - December 31, 1989	1.0	1.6	0.3	1.1	1.1	
January 1 - March 31, 1990	1.7	1.6	0.7	1.0	1.2	
April 1 - June 30, 1990	0.1	1.5	0.3	0.5	0.8	
July 1 - September 30, 1990	0.8	1.2	0.5	0.8	0.9	
October 1 - December 31, 1990	-0.5	0.1	0.3	0.1	0.1	
January 1 - March 31, 1991	0.3	-0.8	0.3	0.1	-0.1	
April 1 - June 30, 1991	0.0	0.5	-0.1	0.3	0.2	
July 1 - September 30, 1991	0.4	-0.2	-0.3	0.1	-0.1	
October 1 - December 31, 1991	0.0	0.0	-0.2	0.3	0.0	
January 1 - March 31, 1992	0.0	0.4	-0.3	0.3	0.2	
April 1 - June 30, 1992	0.4	0.0	0.1	0.1	0.1	
July 1 - September 30, 1992	0.3	0.7	0.0	0.2	0.3	
October 1 - December 31, 1992	0.4	0.5	-0.1	0.4	0.3	
January 1 - March 31, 1993	-0.3	1.3	0.4	0.4	0.7	

Source: The Survey of Rural Appraisers, Econ. Res. Serv., USDA.

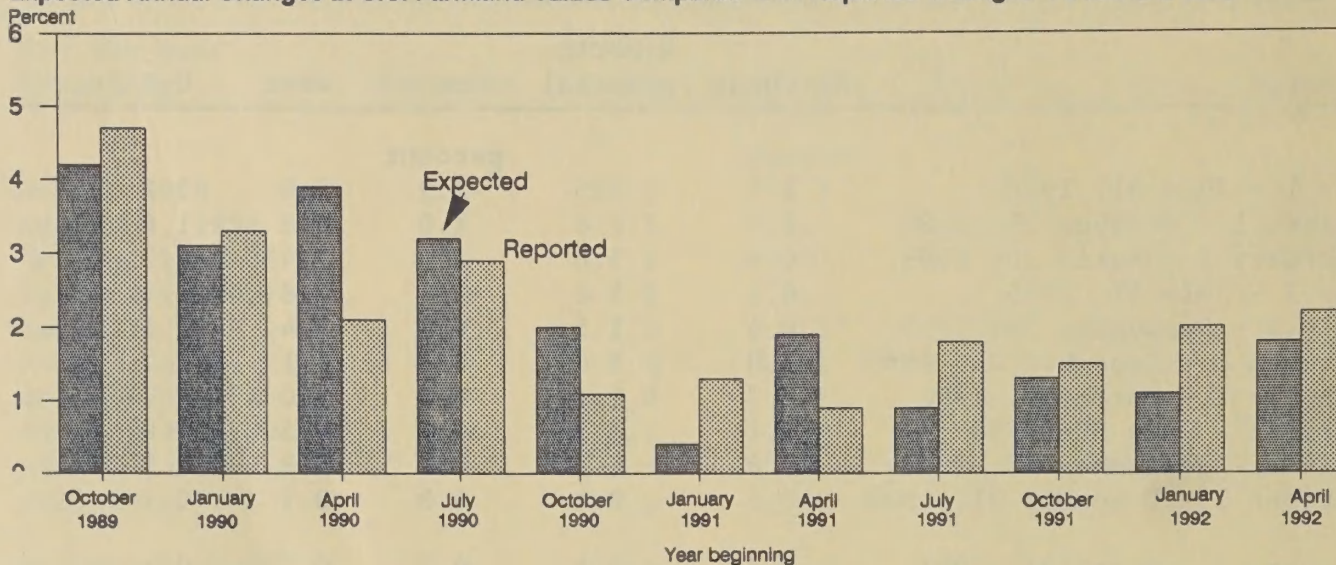
Table 4. Expected quarterly percentage change in farmland values

Quarter	Northeast	North		South	West	U.S.
		Central				
			percent			
May 1 - July 31, 1988	2.0	2.8	-1.6	0.5	1.0	
August 1 - October 31, 1988	3.1	-1.4	-2.7	1.9	0.9	
Nov. 1 - Jan. 31, 1989	1.5	1.7	0.2	0.7	0.9	
May 1 - July 31, 1989	0.1	1.0	0.3	0.5	0.6	
August 1 - October 31, 1989	0.1	1.2	0.2	0.6	0.7	
October 1 - December 31, 1989	0.4	1.6	0.8	1.0	1.2	
January 1 - March 31, 1990	1.4	0.9	0.3	0.6	0.7	
April 1 - June 30, 1990	0.8	1.1	0.5	0.8	0.8	
July 1 - September 30, 1990	0.1	0.7	0.4	0.6	0.6	
October 1 - December 31, 1990	0.6	0.9	-0.4	0.9	0.5	
January 1 - March 31, 1991	0.0	0.1	-0.4	-0.1	-0.1	
April 1 - June 30, 1991	0.3	-0.1	0.3	0.3	0.1	
July 1 - September 30, 1991	0.0	0.4	0.1	0.3	0.3	
October 1 - December 31, 1991	0.2	0.3	0.2	0.3	0.2	
January 1 - March 31, 1992	0.3	0.1	0.0	0.4	0.2	
April 1 - June 30, 1992	1.1	0.3	0.2	0.3	0.3	
July 1 - September 30, 1992	0.3	0.1	0.0	0.0	0.0	
October 1 - December 31, 1992	0.3	0.3	-0.2	0.2	0.1	
January 1 - March 31, 1993	0.2	0.5	0.0	0.2	0.2	
April 1 - June 30, 1993	0.3	0.7	0.3	0.3	0.4	

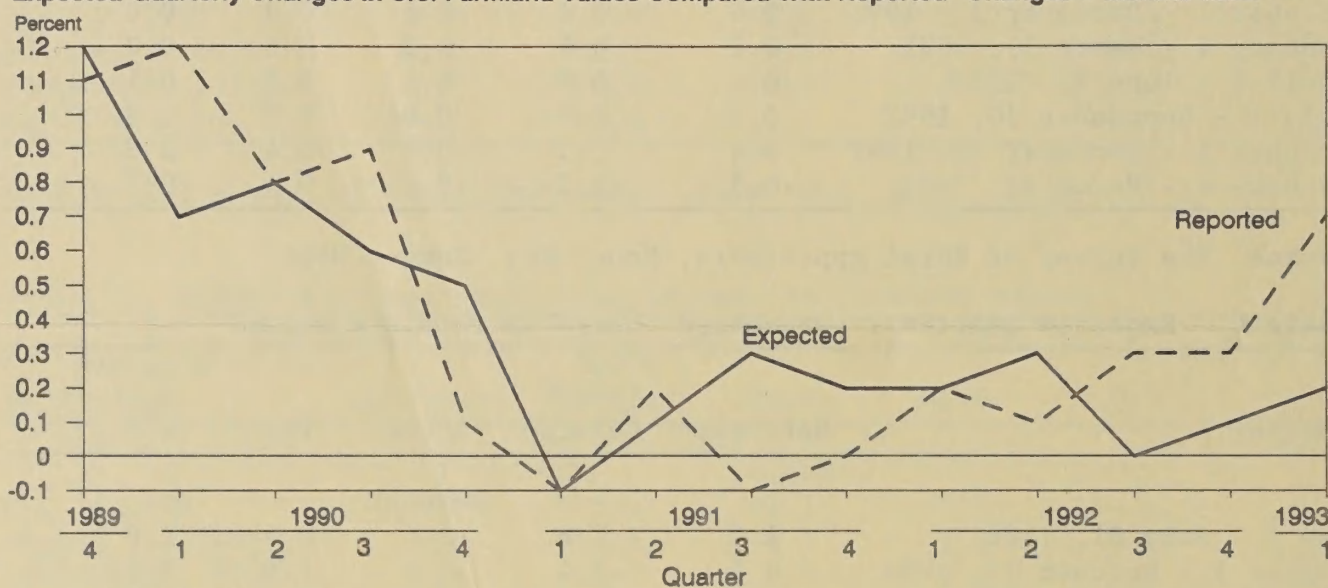
\* Expectations were formed at the beginning of the quarter.

Source: The Survey of Rural Appraisers, Econ. Res. Serv., USDA.

**Expected Annual Changes In U.S. Farmland Values Compared With Reported Changes 12 Months Later**



**Expected Quarterly Changes In U.S. Farmland Values Compared With Reported Changes 3 Months Later**



Source: The Survey of Rural Appraisers, Econ. Res. Serv., USDA.

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